

## 9 Marine Mammals, Seabirds and Sea Turtles

### Focus Questions:

- What physical specimens may be collected from marine mammals?
- What seabird species are endangered or threatened?
- What physical measurements should be taken from a sea turtle?

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## I. Marine Mammals



### Introduction

The Pacific Ocean is home to vast numbers of marine mammals. Interactions between fishing operations and marine mammals are unavoidable. Observers provide reliable estimates of marine mammal mortality and other interactions due to fishing operations.

For marine mammals encountered in a haul or set, WCGOP Observers collect length, sex and weight data for individuals. In the case of sea lions and Northern fur seals, Observers are asked to collect canine teeth which are used by the National Marine Mammal Laboratory (NMML) for species identification and aging purposes. Tissue samples from cetaceans are also collected for use by NMML for genetic analysis.

Marine mammal sighting data contributed to the NMML by Observers provide important information on the distribution and behavior of marine mammals. There are several species in the Pacific Ocean that are threatened or endangered and information on these animals is of great interest.

### ***Marine Mammal Protection Act***

The Marine Mammal Protection Act of 1972 (MMPA) was most recently reauthorized in 1994. In passing the MMPA, Congress found that certain species and populations of marine mammals are, or may be, in danger of extinction or depletion as a result of human activities. The Act states:

- Such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective,

they should not be permitted to diminish below their optimum sustainable population level.

- Measures should be taken immediately to replenish any species or population stock, which has diminished below its optimum sustainable level.
- There is inadequate knowledge of the ecology and population dynamics of such marine mammals and of the factors, which bear upon their ability to reproduce themselves successfully.
- Marine mammals have proven themselves to be resources of great international significance, aesthetic and recreational as well as economic.

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters, by U.S. citizens on the high seas, and on the importation of marine mammals and marine mammal products into the United States. As a NMFS approved Observer you are authorized, under provision 50 CFR 229.7 of the Federal Code of Regulations, to take and possess marine mammal specimens. The only specimens you should ever have in your possession are pinniped snouts and cetacean tissues. **Do not collect bones, skulls, or any other parts as specimens** as they are not needed and will be discarded. Walrus and sea otters are under the jurisdiction of the U. S. Fish and Wildlife Service and you are not allowed to possess any specimen material from them. Possession of any part of a walrus or sea otter is a federal offense.

Under the Marine Mammal Protection act it is also illegal to intentionally feed any marine mammal in the wild. Intentional feeding is considered a form of harassment. Fully document any intentional feeding of marine mammals in your Observer Logbook. Include the name(s) of the person(people) involved

in the incident, a description of the marine mammal, and a summary of where and how the violation occurred.

### ***Marine Mammal Data Collection Priorities***

The role of Observers under the MMPA is to conduct statistically reliable monitoring of fishing operations and to record information on all interactions between fishing operations and marine mammals. Always whole haul sample for marine mammals caught by a vessel's fishing gear.

Marine mammal data collection in order of priority:

1. Collect length, sex, and weight (if possible) information from any dead marine mammal brought on-board a fishing vessel.
2. Collect canine teeth (snouts) from any dead sea lion or Northern fur seal brought on-board a fishing vessel.
3. Collect tissue from any dead cetacean brought on-board a fishing vessel.
4. Collect interaction and sighting information on marine mammals that interact directly with the fishing vessel and/or the vessel's fishing gear.
5. Collect sighting information on marine mammals that are visible from the vessel while at-sea.

## Marine Mammal Data Collection Procedures

Data collection from marine mammals falls into two categories, the collection of biological specimen information and the collection of interaction and sighting information. Biological specimen information is collected from dead marine mammals brought on-board fishing vessels and includes the length, sex and weight of the animal. Collection of specimen data may also include taking a physical sample such as a snout or tissue sample.

Interaction and sighting information is collected from live marine mammals that come in contact with the fishing vessel or that can be seen from the fishing vessel while at-sea. Interaction and sighting information includes a physical description of the marine mammal(s), behavioral information and data about the physical environment (sea state, visibility, etc.).

When collecting biological specimen or interaction and sighting information from marine mammals, follow the data collection procedures explained below.

### *Lengthing Marine Mammals*

All dead marine mammals captured during fishing operations must be measured. Before touching a marine mammal, remember that there are many diseases that are transferable from marine mammals to humans. **Always wear gloves when handling a marine mammal.**

There are two acceptable methods for measuring marine mammals, standard lengths and curvilinear lengths. Taking a standard length is the preferred method. The standard length of a marine mammal is the distance in a straight line from the tip of the snout or rostrum to the tip of the tail notch (See Figure 7-1, measurement #1). A curvilinear length is the shortest surface distance from the tip of the snout or rostrum to the tip of the tail notch along the back, belly, or side (See

Figure 7-1, measurement #2). This method is used if rigor has set in or the animal is too large or deteriorated to maneuver.

Collect marine mammal lengths using the following procedure:

1. Put on a pair of rubber deck gloves to prevent the transfer of disease.
2. Lay the marine mammal on its back with its head and vertebral column in a straight line as best possible.
3. Weigh the Marine Mammal or if too large, visually estimate weight.
4. Take the standard length by measuring the straight line distance from the tip of the snout or rostrum to the tip of the tail notch on an animal that is belly up (preferred method).

### OR

Take the curvilinear length by measuring the shortest surface distance from the tip of the snout or rostrum to the tip of the tail notch along the back, belly, or side.

5. Record the weight on the Species Composition Form (if actual weight) or Catch Form (if visual estimate).
6. Record the length, sex, weight (if actual) and species on the Biospecimen Form.
7. Record interaction and sighting information on the Marine Mammal Sighting Form.

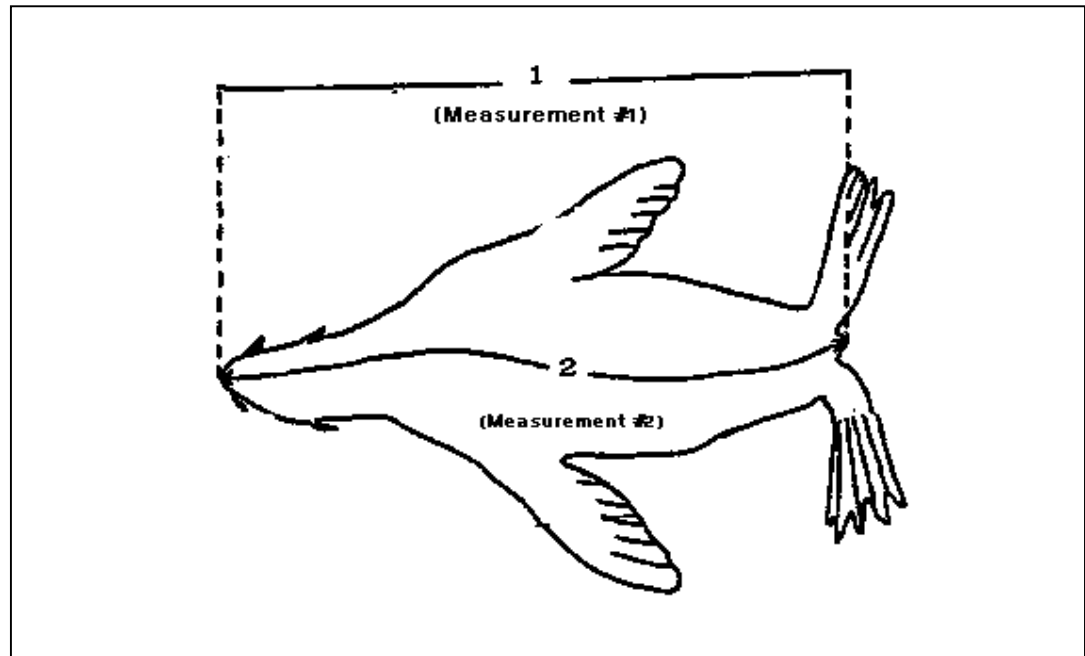


Figure 7-1: Pinniped Measurements (NPGOP)

### ***Sexing Marine Mammals***

Sexing marine mammals is not difficult. See the diagrams in Figure 7-2 to view the morphological differences between male and female cetaceans and pinnipeds.

In Cetaceans, the distance between the anus and the genitals is greater in males. Otherwise the sexes appear similar because both sexes have external teats, and females have an enlarged clitoris.

Determine and record marine mammal sexes as follows:

1. Examine the genital region of the marine mammal.
2. Record the length, sex, weight (if actual) and species on the Biospecimen Form.
3. Record interaction and sighting information on the Marine Mammal Sighting Form.



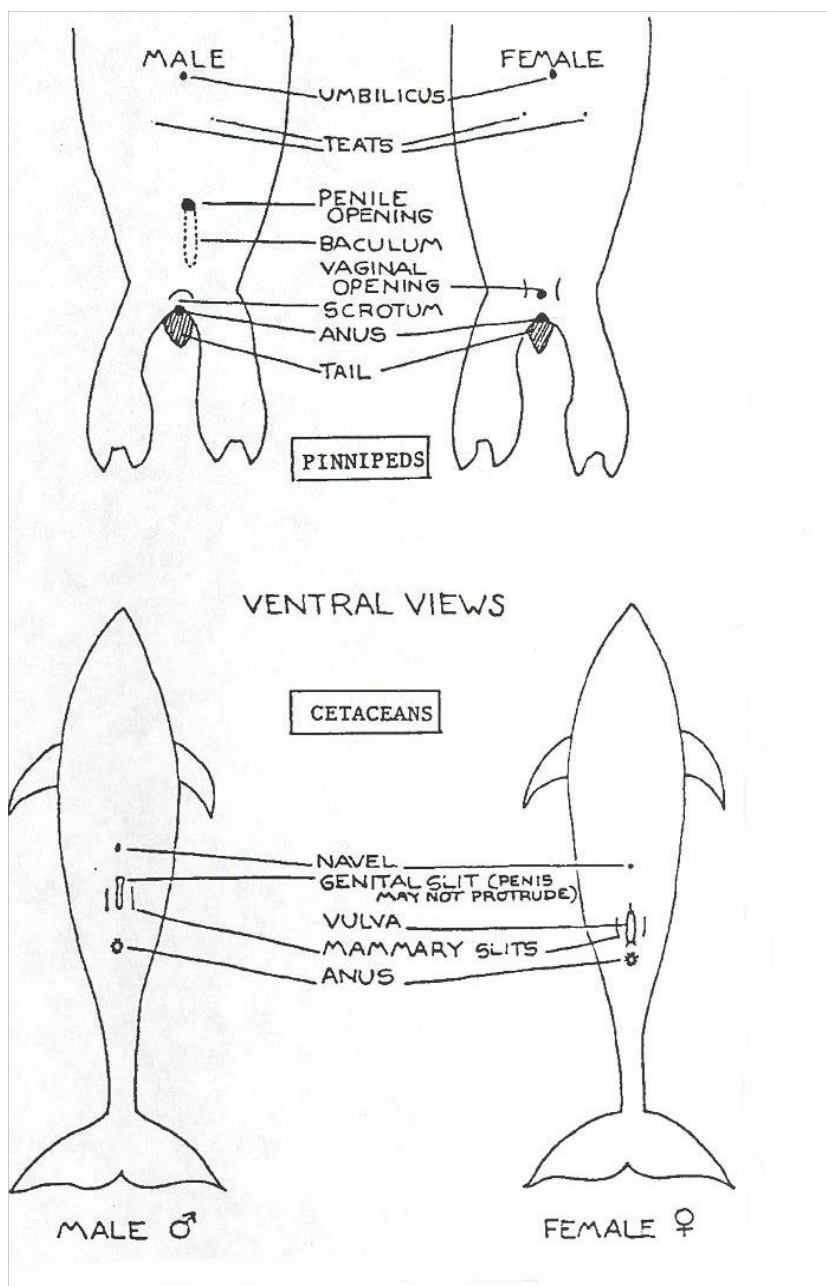


Figure 7-2: Sexing Marine Mammals (NPGOP)

### *Collecting Canine Teeth from Pinnipeds*

If a Steller's sea lion or Northern fur seal is caught and killed or found dead in the fishing gear, the canine teeth of the animal must be collected. Pinniped teeth are used for aging, assessing health, and species identification.

The end of the upper snout must be cut off without damaging the root of the canine teeth. The procedure for the collection of canine teeth from a pinniped is:

1. Skin the snout using a sharp knife.
2. The roots of the canine teeth arch back. To ensure that the entire canine root is collected, cut the snout between the second and third post-canine teeth (See Figure 7-3). Use a hacksaw to remove the snout.
3. Preserve the snout by placing it inside three plastic bags and either freezing the specimen or salting it.



**TIP\*** Never preserve the snout in formaldehyde or alcohol because this will destroy the area of the tooth needed for age reading.

4. Complete a Specimen Collection Label for the snout and include the haul/set retrieval location on the back of the label. The label should have a bar code number on the back, which was affixed under clean, dry conditions. Include the label in the plastic bags with the snout, preferably placed in between the inner bag and the outer bag.
5. Record the length, sex, weight (if actual) and species on the Biospecimen Form. Record a Dissection Type of "3" for snout and document the bar code number attached to the back of the Specimen Collection Label in the Dissection Number column.

6. Record interaction and sighting information on the Marine Mammal Sighting Form.

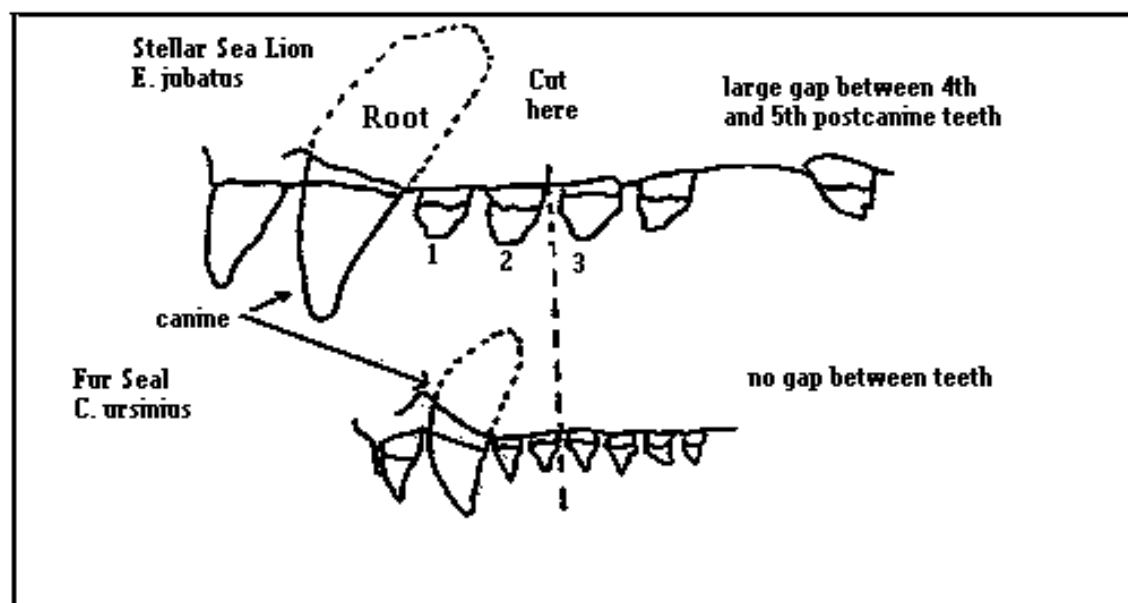


Figure 7-3: Removing Pinniped Canine Teeth

### *Collecting Tissue from Cetaceans*

Genetic information can be used to track and identify cetacean populations. Observers have access to cetacean carcasses and can easily collect tissue samples to be used for genetic analysis. Skin samples should be taken from all cetacean carcasses, regardless of their condition. Cetacean samples are stored in Dimethyl Sulfoxide (DMSO), which is a hazardous substance (see Appendix S for Material Safety Data Sheet).

**Warnings about DMSO:** It has exceptional solvent properties for organic and inorganic chemicals and is widely used as an industrial solvent. DMSO has also been used to administer drugs topologically. It is able to penetrate intact skin and will carry anything dissolved into it directly in the

blood stream. Side affects from DMSO include nausea, headache, and skin rash. Further, since DMSO is a “carrier” chemical, it could deliver harmful substances into the bloodstream if they are present in impure DMSO or on the skin. Great care should be taken when handling DMSO and you should never allow it to come into contact with your skin. **Always wear the nitrile gloves provided when handling DMSO.**

Collect tissue samples from cetaceans using the following procedure:

1. After collecting length and sex data, exchange your fishing gloves for the blue nitrile gloves provided (do not use latex gloves). This is to protect you from disease and DMSO. The nitrile gloves also help protect the tissue sample from DNA contamination. DNA contamination from any source may compromise the sample.
2. Lightly scrape the sample area clean with a knife to remove fish slime and to reduce potential contamination of the sample. The sample can be collected from anywhere on the animal, but should preferably be taken from the back of the animal just posterior to the dorsal fin.
3. Using a sterile scalpel, cut out a strip of skin approximately 2 cm by 1 cm. Remove any excess blubber from the strip of skin.
4. Place the skin sample in the vial of DMSO provided. Try not to take a large sample, the skin sample must fit in the DMSO vial and be completely covered by the solution. There should be no more than one tissue sample per vial. Store DMSO tissue samples at room temperature. Do not freeze.

5. If DMSO vials are not available, preserve tissue samples using one of the following methods.
  - Place the tissue sample in a sterile otolith vial and freeze it.
  - Place the tissue sample in a sterile otolith vial filled with a saturated salt solution or table salt and store at room temperature.
6. Record the length, sex, weight (if actual) and species on the Biospecimen Form. Record a Dissection Type of “4” (tissue) and the bar code number from the otolith vial in the Dissection Number column.
7. Record interaction and sighting information on the Marine Mammal Sighting Form.

### ***Collecting Data from Tagged, Branded or Tattooed Marine Mammals***

The NMML and several other state and federal programs have projects tracking marine mammals. To do this they may place a tag, brand, or tattoo on the marine mammal. Radio tags have been affixed to several Stellar sea lions and elephant seals as well as several species of cetacean. Inert ear tags have been placed on several species of pinnipeds. More common are brands and tattoos; usually the brand or tattoo can be found under the flippers or on the belly of the animal.

Collect data from tagged, branded or tattooed marine mammals using the following procedure:

1. If the marine mammal is dead, retrieve the tag and any research instrumentation/attachments affixed to the animal.
2. If the marine mammal is dead, record the length, sex, weight (if actual), tag number and species on the Biospecimen Form.

3. If the animal is a sea lion or Northern fur seal, collect the canine teeth. Instructions for collecting pinniped canine teeth are contained earlier in this chapter.
4. If the animal is a cetacean, collect a tissue sample. Instructions for collecting cetacean tissue samples are contained earlier in this chapter.
5. For both live and dead tagged marine mammals, record interaction and sighting information on the Marine Mammal Sighting Form. Include the tag number and description (color, location, etc.) of the tag, brand or tattoo in the notes section.

### Marine Mammal Interaction and Sighting Information

Marine mammal interaction and sighting information helps NMML determine the distribution and behaviors of marine mammals. When collecting marine mammal interaction and sighting information, pay close attention to both the physical characteristics of the animal and to its behavior.



**TIP\*** Marine mammal sighting is the lowest priority Observer responsibility. Sighting information should only be collected if it does not interfere with other observer data collection priorities.

### ***Marine Mammal Physical Characteristics***

Below are some general physical characteristics to take note of when collecting marine mammal information.

#### **Cetaceans**

- **Body shape** – Robust or slender, small or large?
- **Head shape** – Long or short, definite beak present, bulbous forehead?
- **Dorsal fin shape** – small or large, curvature, location on body?
- **Coloration** – spots, stripes, patches or mottling?
- **Scars and scratch marks** – pieces missing from fins, scratches or dents on body?
- **Orca saddle patches** – note exact size and shape of patch. Take a photo if possible. Researchers are able to identify individual Orcas by their saddle patch.
- **Shape and direction of blow** – bushy or tall blow, single or double blow, blow is straight up or goes forward?

#### **Pinnipeds**

- **Body shape** – Robust or slender, small or large?
- **Head shape** – Long or short snout, ears present?
- **Coloration** – spots, stripes, patches or mottling?
- **Scars and scratch marks** – pieces missing from flippers, scratches on body?

### ***Marine Mammal Behaviors***

Animal behavior is useful in assisting with accurate species identification. Descriptions of several standard cetacean and pinniped behaviors are listed below. Watch for these behaviors when collecting marine mammal sighting data.

#### **Small Cetaceans**

- **Bow riding**—Animals swim beside the bow or in the bow wave of a moving ship.
- **Leaping entirely out of the water**—Animal jumps fully clear of the surface of the water (as opposed to merely breaking the surface of the water), not for forward locomotion but for other reasons.
- **Porpoising**—Animal raises its body to be nearly or fully out of the water while traveling forward at a fast rate of speed, usually in a fluid, arching motion.
- **Rooster tailing**—Animal surfaces at high speed creating a spray of water in front and over the top of the animal which looks like a rooster's tail. Usually seen only in Dall's porpoise.
- **Slow rolling**—Animal comes to the surface to breathe, with the blowhole and dorsal area usually showing, and then rolls back underwater.



## Large Cetaceans

- **Blow visible from a distance**—Blow can be seen from more than 500 meters away. Usually only seen in certain large cetaceans.
- **Breaching**—The whale accelerates forward underwater and then jumps free of the water, sometimes fully clearing the water's surface, and then lands on the surface of the water, creating a large splash. Used for Orca sized cetaceans or larger.
- **Flipper slapping**—Whale floats or swims at the surface, turns on its side and slaps one pectoral fin against the water, either once or several times in quick succession.
- **Group feeding**—Seen primarily in humpback whales, when they coordinate feeding by lunging out of the water with their mouths open, engulfing fish and water.
- **Lob tailing**—Whale raises its tail flukes up out of the water and slaps them down against the surface with great force. This may occur once or be repeated many times.
- **Spy hopping**—Whale is vertical or upright in the water and raises its head up out of the water, usually with its eye showing.
- **Tail raised on dive**—When diving, the whale's entire tail lifts completely above the water before going underwater.
- **Side and stern wake riding**—Whale is riding in the wake created amidships along the side of the vessel, or the wake created by the stern.

## Pinnipeds

- **Jug handle**—Seal or sea lion floats on its side with one front flipper and one rear flipper above the water, creating what looks like a handle.
- **Porpoising**—Pinniped is swimming fast, jumping at least partially out of the water in fluid, arching motions. This swimming pattern resembles that of dolphins or porpoises seen at a distance.
- **Rafting**—A group of pinnipeds resting at the surface together.
- **Spooked from haulout**—Pinnipeds which had been resting on a beach, rocks or ice dove into the water due to your vessel's interaction with them
- **Vocalizing**—Pinniped making directed noises at you or at another pinniped.

## Marine Mammal Data Collection Forms

There are three forms to use when collecting marine mammal information.

1. Biospecimen Form.
  - Use this form to record length, sex, and weight information from dead marine mammals.
  - Use this form anytime canine teeth or a tissue sample is collected from a dead marine mammal.
2. Marine Mammal Sighting Form.
  - Use this form to record marine mammal interaction or sighting information.

### 3. Specimen Collection Label.

- Use this form to record data when sea lion or Northern fur seal canine teeth (snouts) have been collected.

The Marine Mammal Sighting Form should be completed whether or not the marine mammal is alive or dead and whether the animal has been brought on-board the fishing vessel or not. The Biospecimen Form only needs to be completed for dead marine mammals on-board a fishing vessel.

#### ***Biospecimen Form Instructions***

Complete the Biospecimen Form any time length, sex or actual weight information is collected from a dead marine mammal. Also complete this form if canine teeth or tissue samples have been collected. An example of the form is included as Figure 7-4.

- **Haul Number** – Record the number of the haul that the marine mammal came from.
- **Date** – Record the date as MM/DD/YY.
- **Trip Number** – Record the trip number generated by the database system.
- **Coast Guard Number** – Record the USCG vessel number on limited entry trawlers and fixed gear vessels (if they have one). Do not record anything in this field if you are on an open access vessel or a limited entry fixed gear vessel that does not have a USCG number.
- **Catch #** - Record the number that corresponds to the catch category on the Catch Form.

- **Catch Category** – Record in capital letters the catch category the species is in as recorded on the Catch Form.



**Tip\*** - Marine mammals are usually sampled as their own Catch Category (ZMRM).

- **R or D** – Record whether the sample came from an **R** – Retained or **D** – Discarded catch category.
- **Species Name** - Record the **common name** of the species. This column must be filled in with the species name. Do not only enter the species code! The common name listed on the paperwork must match the common name used in the database.
- **Species Code** - Record the species code of the corresponding species. See Appendix C for a list of marine mammals and species codes.
- **Method** – Record the Biospecimen Sampling Method used.
  - 6 - Outside and Nonrandom
  - 7 - Outside and Random
  - 8 - Inside and Nonrandom
  - 9 - Inside and Random
- **Sex** – Record **M** – Male, **F** – Female, or **U** – Unknown (individuals where the sex cannot be determined). If you did not attempt to sex the individual, LEAVE COLUMN BLANK.
- **Viabilities** – Do not record viability information for marine mammals.
- **Length** – Record the length of the marine mammal in centimeters.

- **Weight** – Record the weight of the marine mammal in pounds.
- **Maturity Stage** – Do not record maturity stage information for marine mammals.
- **Dissection Type** – Record the type of dissection that was taken.

1 – Otoliths  
2 – Scales  
3 – Snout  
4 – Tissue

- **Barcode Number** – Record the barcode number of the vial, envelope, or other container that the dissected part was placed in.
- **Tag Number** – Record the tag number if the individual was tagged.
- **Comments** – Document any important information regarding the marine mammal.
- **KP Length** – Sum up all of the length **by species** and note total of all lengths in the KP Length (keypunch length) column.
- **KP Frequency** - Sum up all of the frequencies **by species** and note total of all frequencies in KP Freq (keypunch frequency) column.



### *Specimen Collection Label Instructions*

Complete the Specimen Collection Label when a pinniped snout has been collected. An example of the form is included as Figure 7-5.

- **Vessel Name** – Record the name of the vessel on which the specimen was collected.
- **Haul Number** – Record the haul number from which the specimen was collected.
- **Trip Number** – Record the trip number generated by the database system.
- **Date** – Enter the date that the haul/set was retrieved as MM/DD/YY.
- **Species Identification** – Record the common name of the species.
- **Entered As** – Record the species name entered into the database, if this differs from the above.
- **Depth (FM)** – Record the retrieval depth of the haul/set in fathoms.
- **Length (cm)** – Record the length of the marine mammal in centimeters.
- **Weight (LB)** – Record the weight of the marine mammal in pounds.
- **Sex** – Record the sex of the marine mammal.
- **Observer Name** – Record your first and last name.

SPECIMEN COLLECTION LABEL West Coast Groundfish Observer Program DOC/NOAA/NMFS/NWFSC/FRAMD 2725 Montlake Blvd. Seattle, WA 98112 (use pencil ONLY!)	
VESSEL NAME_____	HAUL NUMBER_____
TRIP NUMBER_____	DATE_____
SPECIES IDENTIFICATION_____	
ENTERED AS_____	
DEPTH(FM)_____	LENGTH(CM)_____
WEIGHT(LB)_____	SEX (if applicable)_____
OBSERVER NAME_____	

Figure 7-5: Specimen Collection Label

### ***Marine Mammal Sighting Form Instructions***

Complete the Marine Mammal Sighting Form for marine mammal interaction and sighting information. Fill out the form as completely as possible. The more information you provide, the more useful the data is to NMML in determining species ranges and documenting interactions. An example of the form is included as Figures 7-6 and 7-7.

- **Observer** – Record your first and last name.
- **Vessel** – Record the name of the vessel.
- **Date** - Record the date as YY – MM - DD.
- **Time** - Record the time that the marine mammal was first seen in military time HH:MM.



- **Latitude** - Record the latitude (in degrees, minutes, 1/10<sup>th</sup> of a minute) where the marine mammal was first seen.
- **Longitude** - Record the longitude (in degrees, minutes, 1/10<sup>th</sup> of a minute) where the marine mammal was first seen. Record a “W” (west) in the box following the longitude.
- **General Location of Vessel** – Record a brief description of the vessel’s general location. This field is optional.
- **Sighting Conditions** - Record a check mark in the box that best describes the overall sighting conditions (excellent, good, fair, poor).
- **Beaufort** – Record the Beaufort sea condition value. A description of each Beaufort value is listed on the back of the form.
- **Surface Water Temperature** - Record surface water temperature in degrees centigrade.



**Tip\*** - The surface water temperature can often be obtained from the skipper as many new sonars, plotters, and net detectors record the surface water temperature.

- **Species** – Record the common name of the species. Do not enter the species code!
- **Confidence** – Record a check mark in the box that best describes your confidence (sure, likely, unsure) in your species identification.
- **Sighting Cue** - Note what the marine mammal did to attract attention.

- **Closest approach** - Note the distance in meters of the closest approach of the marine mammal to the vessel.
- **Number Sighted Best** - Record the best estimate overall of the number of individuals observed.
- **Number Sighted Minimum** – Record the best estimate of the minimum number of individuals observed.
- **Number Sighted Maximum** – Record the best estimate of the maximum number of individuals observed.
- **Body Length Estimate** – Record a check mark in the box that best describes the length of the individual(s) observed.
- **Behaviors Seen** - Circle all of the behaviors observed during the sighting.
- **Narrative and Sketches** – Record physical and behavioral information about the animal(s). This section is the most important section of the form and should be completed as fully as possible. A short list of key features to note is listed below.

General size and shape of the body  
 Size and shape of the snout  
 Color patterns on the fins and body  
 Size and shape of the tail and flippers  
 Scars and scratch marks  
 Size and shape of dorsal fin and its position  
     on the body  
 Shape and direction of blow  
 Location of the blowhole  
 Animal behaviors

- **Fishing Interactions** – Circle all of the interactions observed between the marine mammal and the fishing vessel.
- **Photos/ Video** – Record the bar code number from the disposable camera and the frame number of the picture.
- **Trip number** - Record the trip number generated by the database system.
- **Federal Groundfish Permit Number** - Record the Groundfish Permit number if the vessel has one.



**Tip\*** - The Federal Groundfish Permit Number can be found on the online database, under Vessels – Vessel Information.

- **Coast Guard Document #** - Record the USCG vessel number if they have one. Do not record anything in this field if you are a vessel that does not have a USCG number.
- **Silhouettes** – On the back of the Marine Mammal Sighting Form, circle the silhouette of the marine mammal that looks the most like the marine mammal observed.

Form WCOP

**MARINE MAMMAL SIGHTING**

NOAA/NMFS/AFSC/NMML  
Platforms of Opportunity  
7600 Sand Point Way NE  
Seattle, WA 98115

Observer(s) \_\_\_\_\_ Vessel \_\_\_\_\_

year month day local time (24 hr. clock) +/-

latitude N/S general location of vessel (optional)

longitude E/W sighting conditions Beaufort +/- water temp.

species (common and/or scientific name) Please fill out a form for each species confidence

sighting cue sure likely unsure

closest approach number sighted (best) number (minimum) number (maximum)

**For Office Use Only**

observer

platform vis species count

sighting cue photos roll frames

behaviors, cues and interactions

behaviors, cues and interactions length multi

**Narrative**

Make identifications only on specific features seen. Mention them here. Include body features, markings and coloration, associated organisms, elaborate on behaviors, etc. The most valuable sightings contain a good amount of detailed information.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Sketches**

When possible, make a sketch noting pigmentation, anatomical features, scarring, posture, anatomical anomalies, group positioning, etc.

**Body Length Estimate**

- ☐ < 3 m (< 10')
- ☐ 3-8 m (10-25')
- ☐ 8-10 m (25-50')
- ☐ 16-26 m (50-80')
- ☐ > 26 m (> 80')

Some common behaviors  
(circle these or add your own in narrative section)

**Small cetaceans**

Bow riding  
Leaping entirely out of water  
Porpoising (swimming fast, body out of the water)  
Rooster-tailing (usually a Dall's porpoise cue)  
Slow rolling

**Large cetaceans**

Blow visible from a distance  
Breaching  
Flipper slapping  
Group feeding  
Lob-tailing  
Spy-hopping  
Tail raised on dive  
Side wake riding  
Stem wake riding

**Pinnipeds**

Jug handle (flippers in air)  
Porpoising (swimming fast, at least partially out of the water)  
Rafting  
Spooked from haulout  
Vocalizing

**Fishing Interactions**

Feeding on discards Killed by gear  
Feeding from gear Killed by propeller  
Feeding on catch Previously dead  
Contact with vessel Lethal removal (trailing gear)  
Contact with gear Lethal removal (not trailing gear)  
Trailing gear Entangled in gear (not trailing gear)  
Deterrence used Entangled in gear (trailing gear)  
Boarded vessel Other  
Swimming near gear Unknown

**Photos/Video (optional)**

☐ photographs  
☐ video

roll/tape # \_\_\_\_\_

frame(s) \_\_\_\_\_

☐ Check here if there was more than one species of marine mammal present at this sighting.

trip number

Federal Groundfish permit number

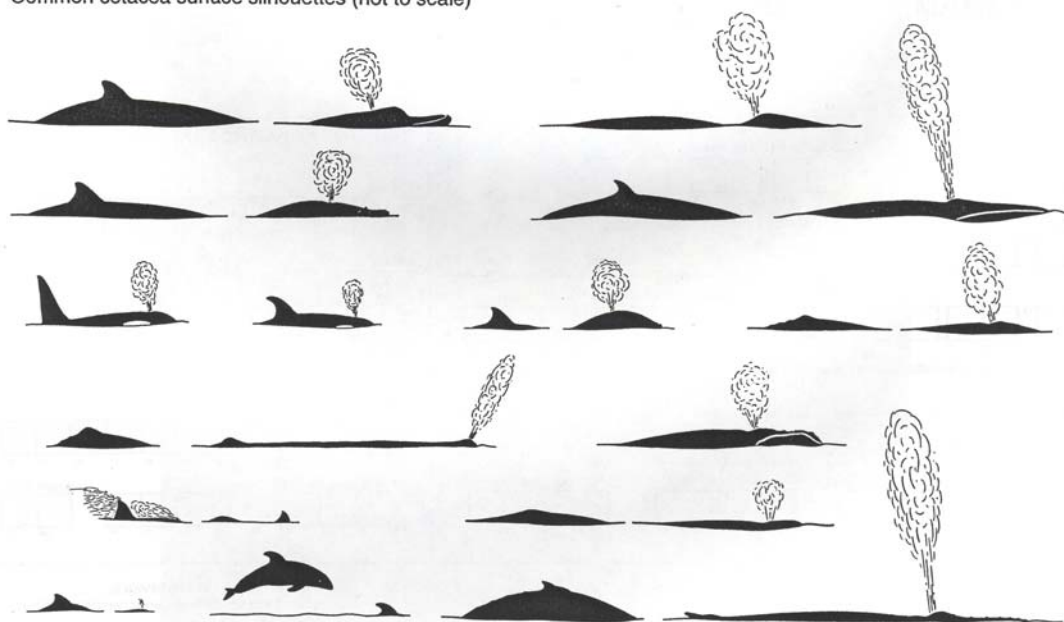
Coast Guard document #

See silhouettes on other side

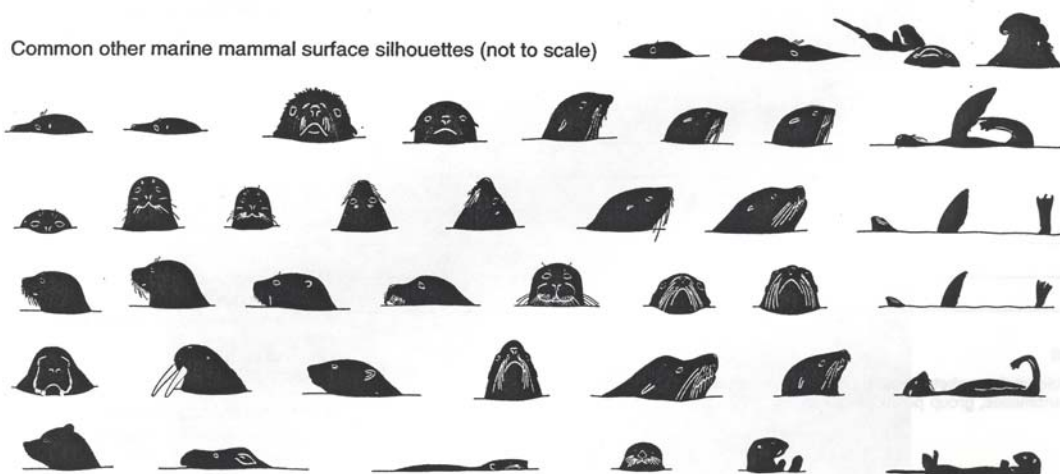
Form WCOP: ver.VIII.2001: Balla, Harkness, Hill, Folkens, Lowell, LaFargue, Mizroch

Figure 7-6: Marine Mammal Sighting Form – Front

Common cetacea surface silhouettes (not to scale)



Common other marine mammal surface silhouettes (not to scale)



These are silhouettes of most genera of marine mammals known to occur in and around North America. Subtleties exist between closely related genera. Care should be taken in identifying species. Assessing one's level of confidence with copious notes and observations is more valuable than a brief misidentification.

BEAUFORT SCALE (Sea Condition)	wind	wave height
0 glassy, calm	0, 1 kts	calm
1 light ripple	1 < 4 kts	light air 1/4'
2 small wavelets	4 < 7 kts	light breeze 1/2'
3 scattered whitecaps	7 < 11 kts	gentle breeze 2'
4 small waves, frequent whitecaps	11 < 17 kts	moderate breeze 4'
5 moderate waves, many whitecap	17 < 22 kts	fresh breeze 6'
6 all whitecaps, some spray	22 < 28 kts	strong breeze 10'
7 breaking waves, spindrift	28 < 34 kts	near gale 14'
8 medium high waves, foamy streaks	34 < 41 kts	gale 18'
9 high waves, dense foamy streaks	41 < 48 kts	strong gale 22'
10-12 not meaningful (time to go home)		

Figure 7-7: Marine Mammal Sighting Form – Back

## II. Seabirds

### Introduction



Seabird mortalities associated with commercial fisheries are estimated to range from 300,00 to one million per year worldwide. Most commercial fisheries do not monitor seabird bycatch, making it difficult to accurately estimate mortality rates or to predict the long-term effects of fishing on seabird populations. The NMFS is collaborating with the U.S. Fish and Wildlife Service (USF&WS) to gather data on fishery related mortality of seabirds in the West Coast groundfish fisheries.

Seabird mortalities may result from direct interactions with fishing gear or through other indirect, or incidental, fishery interactions. Indirect seabird mortalities range from individual strandings on vessel decks, to flocks of birds hitting the ship (“bird storms”). Such vessel/bird interactions occur most frequently when birds become disoriented by bright lights used by vessels at night, or during inclement weather. Observers are one of the few sources of data on this kind of mortality.

If live birds are caught or are found on deck note any bands or tags prior to releasing the birds (many species are unable to fly off of a deck and will need to be dropped over the rail). Note that thoroughly wet birds cannot fly or keep themselves warm. If possible, they should be allowed to dry out in a sheltered spot before being released.

Observer data also provide a valuable source of information on banded birds, critical for the management of migratory species. The Bird Banding Laboratory (BBL) of the U.S. Geological Survey and the Banding Office of the Canadian Wildlife Service jointly manage the bird-banding program in North America. Every year management agencies, research institutions and private individuals, combine to band nearly one million game and non-game birds. Analysis of banding data allows for calculation of important population parameters such as survival and harvest rates of migratory species. Band recovery rates are frequently low and fishery observers can play a tremendous role in increasing the re-capture rate of

banded birds and contributing to the data available for seabird population management.

### Endangered, Threatened and Banded Seabirds

Three species of seabirds listed as endangered and one species listed as threatened (hereafter referred to as ‘species of interest’) may be encountered by West Coast groundfish Observers.

#### *Endangered Species*

- Short-Tailed Albatross  
In 2001, the population estimate for short-tailed albatross was approximately 1600 individuals. These birds occur offshore and are the most likely of the three endangered species to come in contact with commercial fishing gear.
- California Brown Pelican  
California Brown Pelicans are generally sighted inshore. These birds are not likely to be taken by commercial groundfish gear.
- California Least Tern  
California Least Terns are generally sighted inshore. These birds are not likely to be taken by commercial groundfish gear.

### *Threatened Species*

- Marbled Murrelet  
Most incidental takes of Marbled Murrelets generally occur in gillnet fisheries not monitored by the WCOP.

### *Banded Birds*

Seabirds may be marked with:

- Uniquely coded metal or plastic leg bands
- Nasal markers or radio tags

### Seabird Data Collection Priorities

Seabird data collected by Observers falls into two major categories:

- Seabird mortality (caused directly by fishing activities or incidental takes)
- Sightings of species of interest and banded birds

Due to potential time constraints on data collection, seabird information is categorized as **Essential**, collected at all times and **Non-Essential**, collected whenever time permits.

#### **Essential Information:**

- Mortality resulting directly from fishing activities
- Incidental mortality of Species of Interest or Banded Birds
- Sightings of Species of Interest

#### **Non-Essential Information:**

- Sightings of Banded Birds
- Incidental mortality of birds that are not banded or one of the species of interest



## Recording Seabird Data

Three forms are used for documenting seabird data in the WCGOP. These are the Seabird Sighting Form, the Catch Form, and the Species Composition Form.

Information on **seabird mortality** associated with fishing activities is collected whether the seabird is part of a species composition sample or not. Such takes are always recorded on the Seabird Sighting Form, the Catch Form and, if the seabird is part of a species composition sample, on the Species Composition Form as well.

**Seabird sighting and interaction** data for priority species and banded birds are recorded only on the Seabird Sighting Form. When documenting takes or sightings of species of interest or banded individuals of any species always include a thorough description including size, plumage color, description of bill, and any other distinguishing characteristics.

**Incidental takes of non-threatened species** occurring outside of fishing activities should be recorded whenever possible. This data is recorded only on the Seabird Sighting Form.

## Seabird Data Collection Forms

### *Catch Form*

- Record any takes that are part of a haul, including hauls where an actual weight is not obtained for the bird.

### ***Species Composition Form***

- Record any takes that are part of a haul where an actual weight is obtained for the bird.

### ***Seabird Sighting Form***

- Record all mortalities.
- Record all sightings of species of interest or banded birds.

### ***Documenting Takes Resulting from Fishing Activities***

Information on seabird mortality directly related to fishing activities is collected primarily as part of species composition sampling. Instructions for species composition sampling are detailed in Chapters 4 through 7. The instructions provided in the seabird data collection protocol below supplement the aforementioned chapters.

1. Identify each bird to the species level whenever possible. If the species cannot be determined, identify birds to the highest taxonomic level possible. Whenever possible, take photos of birds to verify identification, even if you are certain of the ID.
2. If the bird has leg bands, nasal tags, or radio tags, collect the tags being careful not to damage any identifying information printed on them. If there are multiple leg bands, note which color band is on which leg as this will often identify particular individuals.
3. Weigh each seabird species individually (remember to drain as much water as possible from the carcasses). Birds are much lighter than they appear.

Individual birds rarely weigh over 10 lbs. (and only the larger species, such as albatross, would be that heavy).

4. If birds drop off of longline gear or are thrown overboard before being weighed, identify them as best possible and use an average weight from hauls where an actual weight was obtained for that species or group. If no other birds were caught from this group, visually estimate the weight as closely as possible.
5. If there is an actual weight for the seabird species, record common name, species code, number taken, and weight information on the Species Composition Form. The WCGOP codes for each species or species group can be found on the Seabird Species List (Appendix D).
6. If there is only a visually estimated weight for the seabird species, create a ZBRD Catch Category on the Catch Form. Record the estimated weight, a weight method of 4 - Visual Estimate and write the species name in the comments section.
7. Complete a Seabirds Sighting Form for each species of seabird encountered. In the notes section include identifying characteristics and all information from the band or tag, if one was collected.
8. **If a species of interest is taken, notify NMFS immediately.** Do NOT wait until debriefing. Take photos of the bird to verify identification if possible.

### ***Documenting Seabird Interactions and Sightings***

Incidental seabird takes are the primary vessel interaction data of interest to scientists. In addition, sighting and interaction information on priority species and banded birds helps researchers track seabird populations and provides some

insight into seabird / vessel interactions. When collecting incidental take or sighting data follow the protocol below:

1. Identify each bird to the species level whenever possible. If the species cannot be determined, identify birds to the highest taxonomic level possible. Record key features (color, size, etc.) in the notes section of the Seabird Sighting Form.
2. Note seabird behavior and any contact with the vessel or the vessel's gear. Record key behaviors in the notes section of the Seabird Sighting Form.
3. If the bird has leg bands, nasal tags, or radio tags, note placement, color, and any other characteristics that might help to identify the tag. If there are multiple leg bands, note which color band is on which leg as this will often identify particular individuals.
4. Complete a Seabird Sighting Form for each seabird species encountered.

### ***Seabird Sighting Form Instructions***

All incidental seabird takes and sightings of species of interest or banded birds must be recorded on a Seabird Sighting Form. An example of the form is included as Figure 7-8.

- **Trip Number** – Record the trip number generated by the database system.
- **USCG #** – Record the USCG vessel number on limited entry trawlers and fixed gear vessels (if they have one). Do not record anything in this field if you are on an open access vessel or a limited entry fixed gear vessel that does not have a USCG number.
- **Observer Name** – Record your first and last name.

- **Vessel Name** – Record the name of the vessel.
- **Date** – Record the date as DD/MM/YY.
- **Time** – Record the time that the seabird was first seen in military time HH:MM.
- **Sighting Conditions** – Place a check mark next to the description that best describes the overall sighting conditions (excellent, good, fair, poor).
- **Latitude** - Record the latitude (in degrees, minutes, 1/10<sup>th</sup> of a minute) where the seabird was first seen.
- **Longitude** - Record the longitude (in degrees, minutes, 1/10<sup>th</sup> of a minute) where the seabird was first seen.
- **Beaufort Scale** – Record the Beaufort sea condition value. A description of each Beaufort value is listed on the back of the Marine Mammal Form.
- **Surface Water Temperature** - Record surface water temperature in degrees centigrade.



**Tip\*** - The surface water temperature can often be obtained from the skipper as many new sonars, plotters, and net detectors record the surface water temperature.

- **Species** – Record the common name of the species. Do not enter the species code! A Seabird Species List is included as Appendix D.
- **Confidence** – Place a check mark next to the description best describes your confidence (sure, likely, unsure) in your species identification.
- **Closest approach** - Note the distance in meters of the closest approach of the seabird to the vessel.

- **Number Sighted Best** - Record the best estimate overall of the number of individuals observed.
- **Number Sighted Minimum** – Record the best estimate of the minimum number of individuals observed.
- **Number Sighted Maximum** – Record the best estimate of the minimum number of individuals observed.
- **Fishing Interactions** - Circle the fishing interactions that best describe the interaction between the bird and the vessel.
- **Notes** – Include as much detail as possible about the sighting/interaction. Always include a thorough description of the bird, including size, plumage color, description of bill, and any other distinguishing characteristics used for identification as well as descriptions and locations of all bands.

## SEABIRD SIGHTING FORM



Trip Number <input type="text"/>	USCG # <input type="text"/>
Observer _____	Vessel _____
Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> MM/DD/YY	Sighting Condition <input type="checkbox"/> Excellent <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Poor
Time <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> HH:MM	Beaufort Scale <input type="text"/>
Latitude <input type="text"/> <input type="text"/> ° <input type="text"/> <input type="text"/> ' N	Water Temp <input type="text"/> <input type="text"/> ° C
Longitude <input type="text"/> 1 <input type="text"/> <input type="text"/> ° <input type="text"/> <input type="text"/> ' W	
Species (Common Name): _____	
Confidence <input type="checkbox"/> Sure <input type="checkbox"/> Likely <input type="checkbox"/> Unsure	Body Length < 3 m (10 feet)
Closest Approach <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> M	Number Sighted (Best) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	Number (Min) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Number (Max) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<div style="display: flex;"> <div style="flex: 1;"> <p><b>Notes</b></p> <div style="border: 1px solid black; height: 250px; width: 100%;"></div> </div> <div style="flex: 1; padding-left: 20px;"> <p><b>Fishing Interactions</b></p> <ul style="list-style-type: none"> <li>1 - Feeding on Discards</li> <li>2 - Feeding from Gear</li> <li>3 - Feeding on Catch</li> <li>4 - Contact with Vessel</li> <li>5 - Contact with Gear</li> <li>6 - Trailing Gear</li> <li>7 - Deterrence Used</li> <li>8 - Boarded Vessel</li> <li>9 - Swimming near Gear</li> <li>10 - Killed by Gear</li> <li>11 - Killed by Propeller</li> <li>12 - Previously Dead</li> <li>13 - Lethal removal (trailing gear)</li> <li>14 - Lethal removal (not trailing gear)</li> <li>15 - Entangled in Gear (not trailing gear)</li> <li>16 - Entangled in Gear (trailing gear)</li> <li>17 - Other</li> <li>18 - Unknown</li> </ul> <p>(circle all that apply)</p> </div> </div>	

Figure 7-8: Seabird sighting form.

### III. Sea Turtles

#### Introduction

Five species of sea turtles inhabit the waters off the West Coast of the United States. Observers collect species, size and condition information from the sea turtles they encounter. Other scientists record data on the movements and preferred habitats of the various populations of sea turtles. These data are critical to the development of conservation and recovery strategies for these marine reptiles.

#### Sea Turtle Data Collection

It is unlikely that a turtle will be caught in a West Coast fishery. In the rare event that a sea turtle is encountered, collect the following information:

1. Identify the sea turtle to species. Figure 7-9 is a sea turtle identification flow chart for Eastern Pacific Marine Turtles.
2. To identify the sea turtle, collect the following information:
  - Count the number of costal scutes on the left side of the carapace.
  - Count the number of costal scutes on the right side of the carapace.
  - Count the number of scutes on the midline of the carapace.
  - Count the number of scutes on either side of the plastron.



- Check to see if there are overlapping scutes on the dorsal surface.
  - Check to see if there are pores on the ventral inframarginal scutes.
  - Check to see if the turtle has one pair of prefrontal scales.
  - Check to see if the turtle lacks a bony shell.
  - Check the dorsal coloration of the turtle.
3. Determine the carapace length by measuring the distance between the center edge of the nuchal scute and the posterior edge of the carapace, following the curvature of the dorsal center line. If there is a notch between the two posterior marginal scutes, measure the distance to the rear most point of the scutes. For turtles with a keel running down the center of the carapace (leatherbacks, and juvenile olive ridleys and loggerheads), measure to one side of the median keel, not on top of it.
  4. Determine the carapace width by measuring the maximum distance between the lateral edges of the carapace. Measure over the curvature of the shell.
  5. Determine the tail length by measuring the distance between the posterior most point of the carapace and the tip of the tail. If the stretched tail does not extend beyond the carapace, the length is “0000”.
  6. Note the condition of the turtle as follows:
    - **Previously Dead** – The turtle was already dead when it was sighted or captured.
    - **Released Unharmmed** – The turtle was returned to the sea alive and uninjured.

- **Released Injured** – The turtle was injured as a result of fishing operations or by vessel personnel. “Injured” is an animal removed from the gear with obvious physical injury or with gear attached.
  - **Killed Accidentally** – The turtle died due to injuries incurred during fishing operations or was returned to the sea while comatose.
  - **Escaped** – The turtle left the gear or deck unaided after capture or entanglement, with no apparent injuries.
  - **Treated as Catch** – The turtle was not previously dead and was sacrificed for market, table or other use.
  - **Other/Unknown** – The final fate of the turtle involved in the haul/set is unknown or whose condition after leaving the gear or deck was unobserved.
7. Look for tags and record all data from the tag. If the turtle is dead, remove the tag.
  8. Take one photo of the head and several additional photos of different angles of the whole turtle showing the costal and vertebral scutes.
  9. Record all data on the Sea Turtle Life History Form.

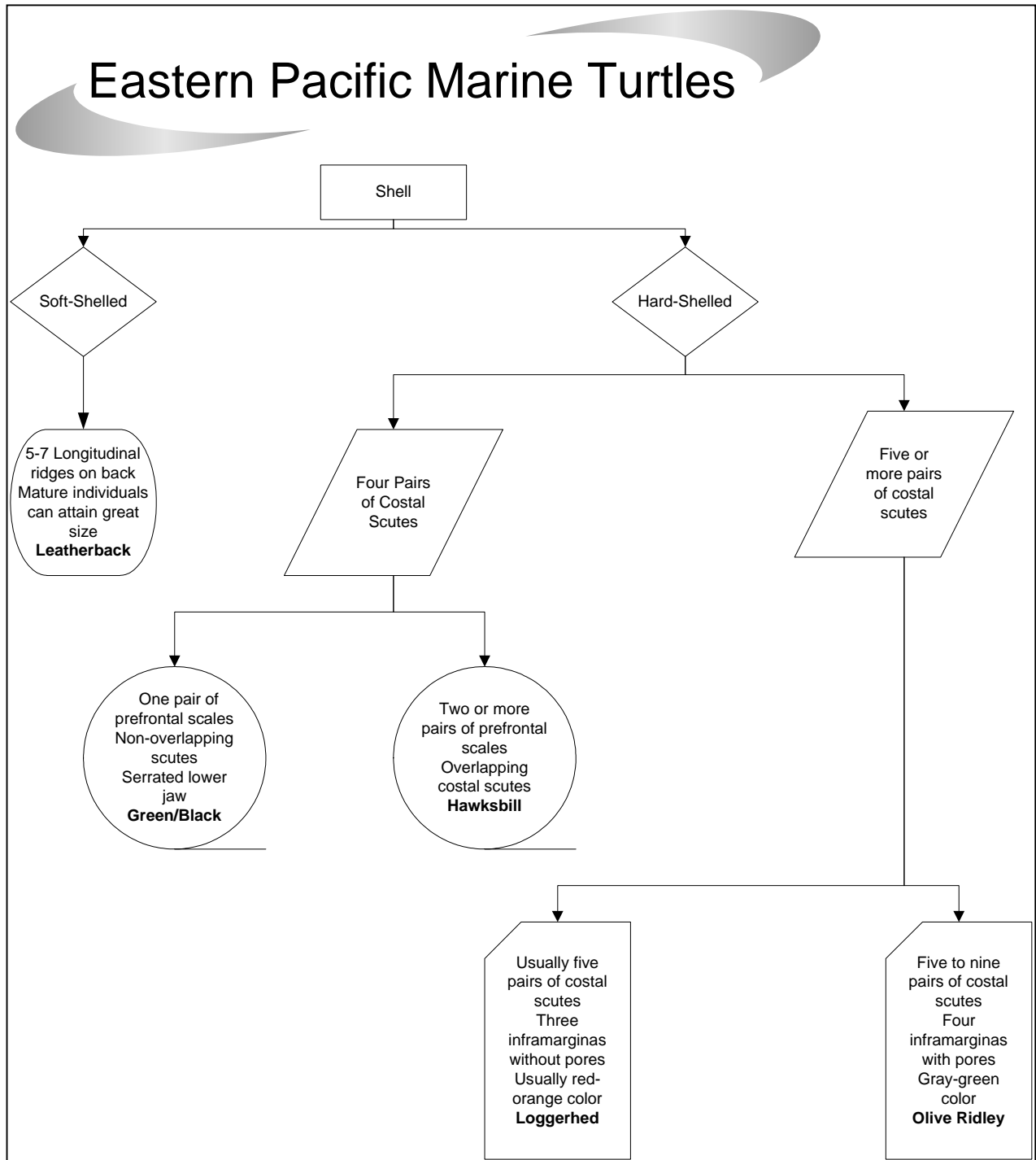


Figure 7-9: Sea Turtle ID Flow Chart

## Sea Turtle Life History Form Instructions

The “Gill Net Sea Turtle Life History Form” has been borrowed from the NMFS South West Region Drift Gillnet Observer Program and should be completed for all sea turtles encountered. An example of the form is included as Figures 7-10 and 7-11.

### Header

- **Trip Number** – Record the trip number generated by the database system.
- **Specimen** – Leave this field blank.
- **Date** – Record as YY – MM – DD.
- **Set #** - Record the haul or set number.
- **Latitude** – Record the haul/set retrieval latitude as degrees (two digits) and minutes (two digits).
- **Longitude** – Record the haul/set retrieval longitude as degrees (three digits) and minutes (two digits).
- **Species** – Record the two letter species code for the turtle.

LV – Olive Ridley  
 ET – Hawksbill  
 CM – Green/Black  
 CC – Loggerhead  
 DC – Leatherback  
 UT – Unidentified

### Identification

- **Left Costal Scutes** – Record the scute count.
- **Right Costal Scutes** – Record the scute count.
- **Vertebral Scutes** – Record the scute count.
- **Inframarginal Scutes** – Record the scute count.
- **Overlapping Scutes** – Record a 1 for yes, 2 for no, or 3 for unknown.
- **Inframarginal Pore** - Record a 1 for yes, 2 for no, or 3 for unknown.
- **1 Pair of Prefrontal Scales** – Record a 1 for yes, 2 for no, or 3 for unknown.
- **Lacks Bony Shell** - Record a 1 for yes, 2 for no, or 3 for unknown.
- **Dorsal Coloration** – Record a 1 for orange/red, 2 for grayish, or 3 for other/unknown.

### Dimensions

- **Carapace Length** – Record the length to the nearest tenth of a centimeter.
- **Carapace Width** – Record the length to the nearest tenth of a centimeter.
- **Tail Length** - Record the length to the nearest tenth of a centimeter.

### Condition of Turtle

- **Enter the number of the description that best represents the condition of the turtle.**

1 - Previously dead	5 - Escaped from net
2 - Released unharmed	6 - Treated as catch
3 - Released injured	7 - Other/unknown
4 - Killed accidentally	
- **Describe Any Injuries** – Provide notes on any injuries or on the general condition of the turtle. If notes are made, record a 1 for yes. Otherwise, record a 2 for no.
- **Photos Taken** – Record a 1 for yes or 2 for no. Record the camera bar code and frame numbers in the comments section.
- **Samples Collected** – Record “2 – No”. At this time we are not collecting ANY samples from turtles.

### Position In Net

- **Horizontal** - Leave this field blank.
- **Vertical** - Leave this field blank.

### Tags

- **Tags Present When Captured** – If a tag is present, record a 1 for yes and the additional information below. If a tag is not present, record 2 for no.

**Tag #** - Record the tag number(s).

**Tag Type** – Record a 1 for plastic or 2 for metal.

**Tag(s) Removed** – Record a 1 for yes or 2 for no.

**Address** – Print the return address on the tag(s).

- **Tags Applied By Observer** – Leave this section blank.

NOAA

# GILL NET SEA TURTLE LIFE HISTORY FORM

U.S. DEPT. OF COMMERCE

TRIP -- SPECIMEN  **T**     YR MO DAY SET #

LATITUDE LONGITUDE  
 **N**   **W**

SPECIES:  
 OLIVE RIDLEY [LV] GREEN / BLACK [CM] LEATHERBACK [DC]  
 HAWKSBILL [ET] LOGGERHEAD [CC] UNIDENTIFIED [UT]

<b>IDENTIFICATION:</b> NUMBER OF: LEFT COSTAL SCUTES <input type="text"/> RIGHT COSTAL SCUTES <input type="text"/> VERTEBRAL SCUTES <input type="text"/> INFRAMARGINAL SCUTES <input type="text"/>		OVERLAPPING SCUTES? YES [1] NO [2] UNK [3] <input type="text"/> INFRAMARGINAL PORES? YES [1] NO [2] UNK [3] <input type="text"/> 1 PAIR PREFRONTAL SCALES? YES [1] NO [2] UNK [3] <input type="text"/> LACKS BONY SHELL YES [1] NO [2] UNK [3] <input type="text"/> DORSAL COLORATION: ORANGE / RED [1] GRAYISH [2] UNK / OTHER [3] <input type="text"/>	
<b>DIMENSIONS (cm):</b> CARAPACE LENGTH (curved) <input type="text"/> CARAPACE WIDTH (curved) <input type="text"/> TAIL LENGTH <input type="text"/>		<b>POSITION IN NET:</b> <input type="checkbox"/> HORIZONTAL <input type="checkbox"/> VERTICAL [1] FOUND IN FIRST THIRD OF NET [1] FOUND IN UPPER THIRD OF NET [2] FOUND IN MIDDLE THIRD OF NET [2] FOUND IN MIDDLE THIRD OF NET [3] FOUND IN FINAL THIRD OF NET [3] FOUND IN LOWER THIRD OF NET [4] POSITION UNKNOWN [4] POSITION UNKNOWN	
<b>CONDITION OF TURTLE:</b> PREVIOUSLY DEAD [1] <input type="checkbox"/> RELEASED UNHARMED [2] <input type="checkbox"/> RELEASED INJURED [3] <input type="checkbox"/> KILLED ACCIDENTALLY [4] <input type="checkbox"/> ESCAPED FROM NET [5] <input type="checkbox"/> TREATED AS CATCH [6] <input type="checkbox"/> OTHER / UNKNOWN [7] <input type="checkbox"/>		<b>TAGS:</b> 1. TAGS PRESENT WHEN CAPTURED: YES NO UNK <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> TAG # TAG # TAG(s) REMOVED? YES NO <input type="checkbox"/> <input type="checkbox"/> [1] [2] [3] [1] [2] ADDRESS: _____ 2. TAGS APPLIED BY OBSERVER: YES NO <input type="checkbox"/> <input type="checkbox"/> TAG # TAG # PLASTIC [1] METAL [2] [1] [2] [1] [2] DESCRIBE ANY INJURIES RESULTING FROM INCIDENTAL CAPTURE OR "OTHER" CONDITION: <input type="checkbox"/> YES <input type="checkbox"/> NO [1] [2] _____ _____ _____ _____ <input type="checkbox"/> PHOTOS TAKEN? <input type="checkbox"/> SAMPLES COLLECTED? YES [1] NO [2] (describe on back)	

NOTES: Use back of form for notes on any abnormalities, diseases, epibiota, signs of shark attack, and the diagnostic characteristics observed when identifying specimens not brought aboard.

Figure 7-10: Sea Turtle Life History Form – Front





